One: Learning to Fail

Human beings internalize lessons learned from failure. We are more likely to remember and reflect on our actions when things go wrong than when they go right. One of the most common shortcomings in simulations is that they do not let the learner lose.

Too often, simulations let learners get things right on the first try or immediately correct their mistakes, depriving learners of valuable moments to reflect on their actions and decisions. This is a great loss because these moments of reflection offer the potential for inspiring behavioral change.

"The Oregon Trail," one of the most popular educational games in history, teaches children about the settlement of the American West. Many of its players' strongest memories are not of successfully reaching California, but of losing wagon members to exhaustion because they did not stop to rest or running out of food because they overhunted the bison. Players can take these losses in stride because, after all, it is just a game. If children can learn and have fun while losing, why do we hesitate to expect the same of adults?

Designers often shy away from making simulations difficult for fear of frustrating or embarrassing their players. These are legitimate concerns – learners do not always have the luxury of being able to look foolish, even in a game. However, educational games and simulations cannot fulfill their purpose of teaching if they are too easy. When games and simulations do not require their learners to think in order to succeed, they waste both their learners' time and their developers' investment.

Failure need not be embarrassing or stressful for learners in carefully crafted games and simulations. The Global Supply Chain Management Simulation, a successful simulation for adults that is played at Harvard Business School among many other places, alerts learners of their mistakes using humorous virtual characters, subtle visual indicators and dialogue sprinkled with levity. Real learning occurs from discovering mistakes made in building a functioning global supply chain. Feedback is delivered through virtual "board members" – introduced as fallible individuals – that point out mistakes while also praising the player's performance. This allows learners to reflect on their mistakes without openly exposing those mistakes to their peers and superiors.

Two: Effective Feedback

Losing is not frustrating when it allows a person to understand how to win. This understanding comes from feedback. If players don't know why they are winning or losing, no significant reflection or learning can occur.

The form of feedback must match the learner and learning experience. When learners need to practice independent decision making, it is useful for them to play for long stretches of time without feedback. When material is particularly difficult or foreign to learners, continual feedback can be vital. In a team-oriented environment, learners might benefit most from face-to-face advice and assessments from peers. On the other hand, learners who are out of their comfort zones might find this intimidating and need to receive feedback in private.

The nature of the feedback should also depend on the difficulty and complexity of the learning objectives. The more complicated the learning objectives, the more depth the game or simulation must have and the more emphasis must be placed on feedback. This means allowing the learners' decisions to have a greater impact on the realities of the simulation. It also requires deeper reflection on the choices that were made. In a game that teaches investment skills, this could mean giving learners more options of how to allocate their funds. In a dialogue-based simulation teaching interpersonal skills, depth could be increased by providing more options of what to say that branch into even more possibilities. The more control learners have, the more carefully they will choose their actions – and the more time they need to spend reflecting on those actions.

Three: The Right Level of Realism

Another crucial part of creating successful games and simulations is tailoring them to fit their learning objectives and target audience, which includes determining the right level of realism. Having the right kind of context and content is imperative in securing learner interest and establishing the relevance of learning objectives – two prerequisites for learning and behavior change. Some learners disengage when encountering situations that they would not encounter in real life. This is especially true for learners who are motivated to quickly acquire a specific skill for a specific reason. It is important to secure the confidence and engagement of such

Game and Simulation Success Statistics

Metrics About Games That Drive Both Interest and Actual Learning

- Laparoscopic surgeons who spend a significant amount of time playing video games (three hours a week) show a 37% decrease in mistakes and 27% increase in speed in actual surgery (Kapp, 292).
- One corporate trainer who used a simulation based on Hollywood Squares saw a 34% increase in passing rates (Kapp, 292).
- A company that manufactures copiers used simulations that require technicians to manipulate a virtual copier. Those who used the simulation displayed greater improvements than those who did not (Kapp, 292).
- One university conducted a study of test scores in a class that taught university planning. Students who played a complex simulation that required them to plan a virtual university scored over 20% higher on tests than students who did not play (Blunt, 9).
- Students who played one simulation designed as part of an introductory business and technology course had an average test score of 91.5% while those who did not play averaged a score of 12.32% ([Blunt, 7).
- When Zapitalism, a business simulation that models the business and economic issues involved in small business was used in a college economics course, students who played scored an average of about 17% higher than those who did not play (Blunt, 8).